



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/528,228	03/18/2005	Yukio Yamaji	P70312US0	6232
13% 7590 01/05/2010 JACOBSON HOLMAN PLLC 400 SEVENTH STREET N.W. SUITE 600 WASHINGTON, DC 20004				
EXAMINER				
MAKI, STEVEN D				
ART UNIT		PAPER NUMBER		
1791				
MAIL DATE		DELIVERY MODE		
01/05/2010		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/528,228

**Applicant(s)**

YAMAJI ET AL.

**Examiner**

Steven D. Maki

**Art Unit**

1791

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 03 September 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 2-8, 10-15, 18 and 19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 2-8, 10-15 and 18-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB06)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

- 1) The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

- 2) Claims 2-8, 10-15 and 18-19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 13 describes "displacing the gypsum slurry from said mixing area to said chute section via said hollow section without removing foam from the gypsum slurry" (emphasis added). Claim 19 describes "the hollow connector section being constructed for providing said continuous flow without removing foam from the gypsum slurry" (emphasis added). One of ordinary skill in the art is not reasonably apprised of the scope protection afforded by the above noted language in claims 13 and 19. For example, it is uncertain if claim 13 requires a step of adding foam to the mixer and it is uncertain if claim 19 requires means for adding foam to the mixer.

- 3) The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

- 4) Claims 2-8, 10-15 and 18-19 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

In claims 13 and 19, the subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention (i.e. the new matter) is "the hollow connector section being constructed for providing said continuous flow without removing foam from the gypsum slurry" (claim 19, emphasis added) and "displacing the gypsum slurry from said mixing area to said chute section via said hollow section without removing foam from the gypsum slurry" (claim 13, emphasis added). There is no explicit support for the above noted language. Moreover, the original disclosure fails to support adding foam to the gypsum slurry in the mixer and constructing the hollow connector section (in sharp contrast to not providing a mixer in the hollow connector section) so as to provide continuous flow without removing foam from the gypsum slurry. It is noted that claims 13 and 19 read on a mixer being provided in the hollow connector section, but the hollow connector section being constructed to avoid the affects of such a mixer so as to obtain the negative limitation of "without removing foam from the gypsum slurry". The above description redefines the invention in a manner not contemplated by the inventor at the time of filing the original disclosure.

5) The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless —

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6) The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Phillips et al

7) **Claim 19 is rejected under 35 U.S.C. 102(b) as being anticipated by Phillips et al (US 5,879,486).**

As to claim 19, the claimed machine is anticipated by Phillips et al's machine. The claimed single mixer reads on main mixer 36. The claimed chute section reads on duct 44. The claimed slurry delivery conduit reads on duct 57. It is noted that duct 44 delivers gypsum slurry to the center of the sheet 14. The description of "chute section having a slurry discharge port for feeding gypsum slurry for the gypsum core to a widthwise center part of a sheet of paper" fails to require the claimed chute section to have structure and/or location different from that of duct 44 of Phillips et al. The claimed "hollow connector section" reads on the combination of conduit 37 and housing 41. The claimed "slurry fractionation port" reads on the opening in housing 41 leading to duct 57. The term "stable" is a relative term which fails to require structure not disclosed by Phillips et al. As to continuous flow of the gypsum slurry by pressure of the mixer alone, this is inherent in Phillips et al's machine since flow through ducts 44, 57 is caused by flow from mixer 36. As to "without removing foam from the gypsum slurry", this language relates to intended use and fails to require apparatus structure (e.g. cross

sectional shape of the hollow connector section) not disclosed by Phillips et al. It is noted that Phillips et al's machine is capable of being used without foam.

Hauber et al

**8) Claims 2-8, 10-14 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hauber et al (US 6,878,321) in view of Miura et al (US 6,193,408) and Sucech et al (US 5,683,635).**

Hauber et al discloses apparatus for making gypsum board comprising mixer 30. Gypsum, water and additives are added to mixer 30 through inlets 32. The mixer 30 mixes the gypsum, water and additives to form a gypsum slurry. Gypsum slurry flows from the **mixer 30** and through outlet 34. *Gypsum slurry 38* is discharged from the outlet 34 onto a bottom facing sheet 14 (paper or glass fiber mat). Controller 36 controls the amount of gypsum slurry 38 permitted to flow through the outlet 34. The gypsum slurry 38 is spread on the bottom facing sheet 14 using roll coaters 40, 42. Gypsum slurry flows from **mixer 30** and through outlet 48. *Gypsum slurry 44* is discharged from the outlet 48 onto the bottom facing sheet coated with slurry 38. The gypsum slurry 44 constitutes a CORE GYPSUM SLURRY 44. Foaming materials can be added to the core gypsum slurry 44 so that its density is less than that of slurry 38. Controller 46 controls the amount of gypsum slurry 44 permitted to flow through the outlet 48. Gypsum slurry flows from **mixer 30** and through outlet 134. *Gypsum slurry 138* is discharged from outlet 134 onto a top facing sheet 114. Controller 136 controls the amount of gypsum slurry 138 permitted to flow through outlet 134. The top facing sheet 114 coated with slurry 138 is then applied onto the core slurry 40. Hauber et al

does not recite mixer 30 having a "hollow connecting section" and "chute section", which feeds gypsum slurry having "stable density and pressure".

As claim 19, it would have been obvious to one of ordinary skill in the art to use Miura et al's single mixer 10 having housing 20, outlet chute 45 ("hollow connecting section") and slurry discharge conduit 41 ("chute section") as mixer 30 in Hauber et al's apparatus and method for making a gypsum board since Miura et al, also directed to the gypsum board art, teaches that mixer 10 for forming a gypsum slurry as shown in Figures 2-7 is not provided with a dead space in the periphery zone of the disc and thereby does not produce a solid mass in the peripheral zone of the disc of the mixer. Miura et al teaches that solid mass produced in the dead space deteriorates the fluidity of the ingredients and slurry within the mixer and degrades mixing performance mixer. Since Miura et al's mixer prevents production of solid mass in the dead space, Miura et al's mixer has improved mixing performance. One of ordinary skill in the art would have been motivated to use Miura et al's mixer 10 as mixer 30 in Hauber et al's process / apparatus to obtain the predicted and expected benefit of improved mixing performance. With respect to "stable density and pressure", a slurry flowing from Miura et al's mixer and through hollow connector section 45 and chute section 41 has a "stable density and pressure" since (1) Miura et al's mixer prevents production of solid mass in dead space and (2) Miura et al provides the mixer with pressure regulator means 43 for controlling internal pressure. The term "stable" is a relative term which fails to require structure not disclosed by Miura et al. In short, there is no difference

between the claimed mixer, hollow connector section and chute section as set forth in claim 19 and Miura et al's mixer 10, hollow connector section 45 and chute section 41.

With respect to "slurry fractionation port", it would have been obvious to one of ordinary skill in the art to provide the slurry discharge conduit 41 (chute section) of the mixer described by Miura et al with a "slurry fractionation port" since (1) Hauber et al teaches providing one mixer discharge leading to dual controllers for controlling the discharge of two or more outlets (col. 11 lines 20-25) and (2) Sucech et al shows using a "slurry fractionation port" to provide one mixer discharge 44 leading to two conduits 46, 48 (Figure 1). When viewed as a whole, the applied prior art to Hauber et al, Miura et al and Sucech et al suggest using Miura et al's mixer 10 as mixer 30 in Hauber et al's method / apparatus and providing a "slurry fractionation port" on the slurry discharge conduit 41 such that part of the slurry flows through the "slurry fractionation port" and then through controller 36 and outlet 34 and the remainder of the slurry flows through controller 46 and outlet 134. The description of "gypsum slurry for the gypsum core" fails to distinguish over either slurry 38 or slurry 138 of Hauber et al. It is emphasized that there is no difference between Miura et al's mixer, outlet chute 45 and slurry discharge conduit 41 and the claimed mixer, hollow connector section and chute section. It is further emphasized that slurry discharge conduit 41 of Miura et al's mixer is a "one mixer discharge" and Hauber et al's disclosure at column 11 teaches one of ordinary skill in the art to fractionate the slurry in "one mixer discharge" such that one part leads to one controller 36 and outlet 34 ("slurry delivery conduit") and another part leads to another controller 136 and outlet 134 (another "slurry delivery conduit").



Sucech et al is additional evidence of the known practice in the gypsum board art to fractionate the slurry from "one slurry discharge". In particular, Sucech et al shows fractionating the slurry in one outlet 44 into two slurries - one flowing through conduit 46 and the other slurry flowing through conduit 48. The branch between outlet 44 and conduits 46, 48 defines a "slurry fractionation port". Only the expected and predicted results of the formation of two slurries having the same composition (one for the bottom sheet and the other for the top sheet) being obtained. With respect to the outlet ("slurry delivery conduit"), the term "stable" is a relative term which fails to require structure different from the outlet disclosed by Hauber et al. Furthermore, the gypsum slurry is *under fluid pressure* in the outlet ("slurry delivery conduit") since it flows there through to be discharged on the sheet. As to continuous flow of the gypsum slurry from the mixing area into the chute section by pressure of the mixer alone, the gypsum slurry moves from the mixer and through outlets 34, 134 and conduit 48 by pressure of the mixer alone since Hauber et al teaches controlling discharge from the mixer using controllers (valves) instead of adding pumps and/or secondary mixers to supplement the pressure from the mixer. Moreover, Miura et al's chute section 41 and hollow connector section 45 fail to contain a mixer and/or beater therein. Claim 19 fails to exclude "controllers". No unexpected results for using a hollow connector section has been shown. The claimed invention has not been compared to Hauber et al.

As to claims 2, 3, 8, 11 and 12, it would have been obvious to provide "valve means" for opening and closing the fractionation port and to use such valve means to obtain desired flow rate since Hauber et al suggests providing a controller (36, 46, 136)

for regulating flow of a gypsum slurry. As to claim 3, it would have been obvious to provide a casing as claimed since it is taken as well known / conventional per se to enclose a valve and its associated ports within a casing. As to claim 8, it would have been obvious to one of ordinary skill in the art to provide the claimed driving device and drive control means since it is taken as well known / conventional in the art to operate a valve using driving device and drive control means. The suggestion to use a "valve" to control flow of gypsum slurry comes from Hauber et al instead of the official notice.

As to claims 4-6, it would have been obvious to one of ordinary skill in the art to provide Hauber et al's gypsum board making apparatus with the claimed foam inlet and use it to introduce foam into the slurry since Sucech et al suggests providing foam feeding inlets 34, 36 for the branch conduits 46, 48 so that the gypsum is not too hard..

As to claim 7, the particular location (top wall) for the fractionation port on the chute section / hollow connector section would have been obvious and could have been determined without undue experimentation in view of (1) hollow connector section 45 and chute section 41 shown by Miura et al in Figure 3 and (2) the suggestion from Hauber et al and Sucech et al to split (fractionate) one flow line into at least two separate flow lines for gypsum slurries.

As to claims 13, 14 and 17, Hauber et al teaches the use of roll coaters 40, 42. With respect to mixing foam / foaming agent, see comments on claims 4-6.

9) **Claims 15 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hauber et al (US 6,878,321) in view of Miura et al (US 6,193,408) and Sucech**

**et al (US 5,683,635) as applied above and further in view of Seecharan et al (US 6,190,476).**

As to claims 15 and 18, it would have been obvious to one of ordinary skill in the art to provide Hauber et al's apparatus with densification mixers 55, 54 as disclosed by Seecharan et al and use them to perform the claimed agitating step for the slurries delivered to the paper sheets since Seecharan et al suggests using such high densification mixers to prevent the coating layers for the paper sheets from having too low a density which interferes with the bond of the gypsum to the paper.

#### Remarks

10) Applicant's arguments with respect to claims 2-8, 10-15, 18 and 19 have been considered but are moot in view of the new ground(s) of rejection.

Applicant's arguments filed 9-3-09 have been fully considered but they are not persuasive.

The 132 declaration by Niimi filed 12-10-08 has been considered but is not persuasive of non-obviousness because (1) the claimed invention has not been compared with Hauber et al, which discloses one mixer discharge leading to dual controllers for controlling the discharge of two or more outlets (col. 11 lines 20-25) and (2) Sucech et al teaches one of ordinary skill in the art to use a slurry fractionation port to obtain two slurries from one discharged slurry. See the one mixer discharge 44 leading to two conduits 46, 48 (Figure 1). In the 132 declaration filed 12-10-08, Niimi states and examiner agrees that Hauber et al teaches the conventional technique of fractionation in which the slurry is fractionated directly from the mixing area in the mixer.

However, Hauber et al is not limited to this conventional technique. See col. 11 lines 17-28 of Hauber et al. Furthermore, the description of "gypsum slurry for the gypsum core" fails to distinguish over either slurry 38 or slurry 138 of Hauber et al.

The 132 declaration by Shmiazoe filed 9-3-09 is not persuasive of non-obviousness since (1) Shmiazoe appears to acknowledge that the specification, claims and drawings of Miura et al are silent as to fractionating slurry, (2) Miura et al's mixer evidences the known use of a "hollow connector section" and "chute section" with a mixer for gypsum slurry and (3) the suggestion to use a slurry fractionation port comes from Hauber et al and Sucech et al instead of Miura et al.

Applicant argues that Phillips et al's conduit 37 and housing 41 are not constructed for providing said continuous flow without removing foam from the gypsum slurry. This argument is not persuasive since Phillips et al's conduit 37 and housing 41 are capable of providing continuous flow without removing foam from the gypsum slurry when no foam is added to mixer 36. The description of "without removing foam from the gypsum slurry" in machine claim 19 (an apparatus claim) relates to intended use and fails to require apparatus structure not disclosed by Phillips et al.

Applicant's arguments regarding Miura et al are not persuasive since (1) applicant appears to acknowledge that the specification, claims and drawings of Miura et al are silent as to fractionating slurry, (2) Miura et al's mixer evidences the known use of a "hollow connector section" and "chute section" with a mixer for gypsum slurry and (3) the suggestion to use a slurry fractionation port comes from Hauber et al and Sucech et al instead of Miura et al.

- 11) No claim is allowed.
- 12) Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

- 13) Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven D. Maki whose telephone number is (571) 272-1221. The examiner can normally be reached on Mon. - Fri. 8:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on (571) 272-1226. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Steven D. Maki/  
Primary Examiner, Art Unit 1791

Steven D. Maki  
January 4, 2010